



TRUEBALLOT INC.®
Election Services and Solutions

Western US Office
301 W. 18th Street Suite 205, Merced, CA 95340
(209) 725-3379 or toll-free: (866) 624-8570 ext.2

Honorable Deborah Bowen, Secretary of State
State of California
1500 11th Street, 6th Floor
Sacramento, CA 95814

By email to votingsystems@sos.ca.gov

March 30, 2009

Dear Secretary Bowen,

In the following document, we comment on the proposed "Emergency Regulations: Post Election Manual Tally – Readoption," announced on March 24, 2009.

Executive Summary

1. The approach to "manual tallies" proposed in these regulations fails to address all methods of performing manual tallies, most especially in Sec. 20122(g). Alternative approaches to manual tallies are in all relevant senses "manual tallies." By specifying that some methods of manually tallying ballots are not possible, the Secretary of State has failed to accommodate more robust, cost-effective approaches to election auditing.
2. We are concerned about the "reduction in initial sample size from 10% down to 5% for large contests, and down to 2% for statewide contests" in the new regulations and the "reduction in the requirement to count additional precincts (escalation) by increasing rate of variances permitted." These reductions unnecessarily weaken the assurance of a correct count in the event of close races.
3. In addition to the above, these regulations, which are being promulgated for only 90 days, will in fact apply to a specific statewide special election. Therefore, all cost estimates associated with these regulations should be based on the need to do a *statewide post-election tally*.

Manual Tallies

A manual tally is a critical method of insuring election integrity: after an election, human beings review and count ballots to make sure that the voting system (equipment and tallying software) functioned properly.

What is essential in a manual tally is that *human beings review individual ballots* independently from the operations of voting equipment. For this reason, it would perhaps better be termed a "visual tally" or a "human tally" rather than a manual tally. So long as a human being looks at all ballots to determine which candidates or responses have been selected, and a human being records the results of that inspection, a manual tally has occurred.

Sec. 20122(g) of the proposed regulations state that "the manual tally shall be conducted in public view by hand without the use of electronic scanning equipment." It is no more clear why the manual tally should be conducted without the use of "scanning equipment" than why it should be conducted without the use of pen and paper. So



long as the essential requirements of a manual tally, stated above, exist, the use of particular equipment is irrelevant.

In fact, it is our belief that a manual tally *cannot* genuinely be conducted "in public view" without the use of scanning equipment. If the ballots are not reproduced in a form visible to the public, only the tiniest fraction of the public can actually witness the actions that are essential in the manual tally: the visual review of the ballot, and the determination of which candidates or responses have been selected.

In Appendix A to this letter, we present a more robust, efficient approach to manual counts that make use of scanning equipment.

Sample Sizes

The Secretary of State correctly states that "an emergency continues to exist" in regard to the public's confidence in voting equipment and election procedures. Given that the May 19, 2009 statewide special election is expected to yield both high levels of public attention and close results, we believe that the promulgation of emergency regulations concerning Post-Election Manual Tallies is merited.

However, we believe that there is no cause for these emergency regulations to water down the regulations that existed previously. The description of the new regulations states:

The modifications reflected in the attached regulations are as follows:

- Reduction in the initial sample size from ten percent (10%) down to five percent (5%) for large contests and down to two percent (2%) for statewide contests.
- Reduction in the requirement to count additional precincts (escalation), by increasing rate of variances permitted – from ten percent (10%) to half (50%) of the overall margin of victory – before escalation is required.

No explanation for these modifications is given. However, there is substantial cause for public concern regarding these modifications.

1. The elections that will actually be conducted during the 90-day period that these emergency regulations will be in place are principally statewide elections. Therefore, the real effect of these modifications is the extremely large reduction in the initial sample size for the manual tally from 10% to 2% in the event of an election margin of victory of less than 0.5% for any of the measure on the ballot.
2. We are additionally concerned that by lowering the sample size in these emergency regulations, the lowered sample sizes might become permanently ensconced in the permanent PEMT regulations. This concern is all the stronger because it is not clear that the regulations already in place are adequate for promoting voter confidence in election results.



Estimated Costs

We believe that the methodology used to estimate the cost of these proposed emergency regulations is inadequate to describe the real situation in which the regulations have been promulgated. In particular, these estimates are based on the actual costs reported in regard to the conduct of manual tallies for the June and November 2008 elections. *There are no actual or even estimated costs of a manual tally in a close statewide race, which could involve hundreds of thousands of ballots in 500 or more precincts.*

These regulations will be in effect for 90 days, and therefore in practice apply only to the statewide special election of May 19. It is correctly stated in the readoption report that "the PEMT Emergency Regulations are triggered only in a very small fraction of contests on each ballot." For this reason, the most likely scenario is that the cost of these 90-day regulations will be zero: that none of the May 19 statewide ballot measures is likely to end up within a 0.5% margin of victory.

On the other hand, if a post-election manual tally is triggered on May 19, it is almost certain that it will be for a statewide tally. If a statewide post-election manual tally were triggered, and if CACEO's survey results, which suggest that post-election manual tallies in November 2008 cost \$680,000, are accurate, then it is clear that the cost of a statewide 2% tally would be substantially higher than the fiscal impact statement contemplates. CACEO's number was based on tallies that involved many fewer precincts and ballots than a post-election manually tally of a statewide race would involve.

A correct estimate of the cost of these regulations, therefore, would be either zero or the real cost of a 2% manual tally in the event of a margin of victory less than 0.5% for any ballot measure on May 19. (And given the fact that the various races to be determined on this ballot are related to one another, multiple manual audits are as likely as one manual audit; that is, while there is likely to be zero, if there is one, there may well be more than one.)

Conclusion

For the reasons stated above, we oppose the adoption of the Emergency Regulations proposed until more detailed consideration is given to the points in this letter.

We thank you for your consideration.

Best

Kenneth Mostern
Vice President for Western US Operations

Caleb Kleppner
Vice President for Public Sector Operations



Appendix A: Toward A More Robust Manual Tally

We are proposing an approach for a manual tally that has already proven its value in Humboldt County: use an off-the-shelf scanner to produce images (photographs) of all ballots and then review each image to determine and record the votes. The key differences between this approach and a traditional hand count are:

1. Digital images of ballots are reviewed instead of original pieces of paper.
2. Votes can be recorded in an electronic file rather than marked on a tally sheet.

In this approach, each physical ballot is traceable to a specific digital image, that image is reviewed by humans, and the votes on the ballot are noted. Note that this approach does not depend on any specific technology or software. As long as a digital image of every ballot is created along with a table showing how each image was counted by humans, it doesn't matter what system is used to image, view, record and tally the votes. For example, the tally could be in any spreadsheet or database program, in a text file, or even on a piece of paper on which the tally clerks write each vote.

Below we will describe some of the advantages of this approach, but first, to try to give readers a clear picture of this approach, let us give one of many possible schematics for scanning and counting these ballots.

An off-the-shelf digital image scanner is used that scans batches of up to about 100 ballots and creates one image file in a standard image format (such as jpeg, tiff, gif, etc) for each side of each ballot. Then a standard image viewer of the type that comes bundled with most personal computers is used to view each image, which can easily be projected on a screen or shown live on the Internet for viewing by a wide audience. The caller looks at the image and calls out the votes while tally clerks type the votes into a table showing the image name and the votes. This table could be in a spreadsheet, a word processor, a database program or even a text file, among others.

Table 1 (next page) shows what this tally table might look like. This one was created in Microsoft Excel, but any spreadsheet, database or word processor would do.



Table 1. Possible tally sheet for a manual recount using digital images
(red text indicates votes recorded during manual tally)

Precinct	3033
Ballot Type	BT. 013 / Card 15
Pct/AV/Mail/Prov	Mail Pct

Race (Seats)	a0010001.tif	a0010002.tif	a0010003.tif	a0010004.tif	a0010005.tif	etc.
Community College (4)				Kranenburg		
Reed Union School District (2)	Mathews		Jackson	Jackson		
			Mathews	Mathews		
Tiburon Fire District (2)						
Sanitary District 5 - Tiburon (4)						
Reed Union School Measure A (1)	Yes	Yes	Yes	Yes	No	

To make this even more concrete, below is an actual screenshot showing an image (a0010001.tif) along with the data tally table showing the corresponding votes. Again, the actual applications used to view the image and record the votes are not important.

The next image (next page) shows a computer screen with an image of a ballot and a tally datatable, all of which could be projected on a screen or the Internet.



Screenshot of an image of a ballot along with a tally data table.

OFFICIAL BALLOT
PRECINCT NO. 3033
BT 013
PRECINCT

CONSOLIDATED UNIFORM DISTRICT ELECTION
NOVEMBER 6, 2007
MARIN COUNTY, CALIFORNIA

INSTRUCTIONS TO VOTERS: Use a pen with dark blue or black ink to vote your ballot. To vote for the candidate of your choice, crossmark the oval to the LEFT of the candidate's name. There are no more than 10 candidates for any office. Mark the oval next to the name of the candidate for whom you wish to vote. Do not vote for more than the number of candidates to be elected. To vote for a measure, check the oval to the LEFT of the word "YES" or the word "NO". **WHILE ON INSTRUCTIONS:** To vote for a person whose name is on the ballot, mark the oval to the LEFT of the name for the office and write the person's name on the line. If voting by mail, mark the oval and write the name of the person whose name is on the ballot. **VOTE LIKE THIS**

SCHOOL
MARIN COMMUNITY COLLEGE DISTRICT
GOVERNING BOARD MEMBER
Vote for no more than 1 four (4)

SANITARY DISTRICT 5 - TIBURON
DIRECTOR
Vote for no more than three (3)

MEASURE SUBMITTED TO THE VOTERS
SCHOOL
REED UNION SCHOOL DISTRICT
GOVERNING BOARD MEMBER
Vote for no more than two (2)

DISTRICT
TIBURON FIRE PROTECTION DISTRICT
DIRECTOR
Vote for no more than two (2)

END OF BALLOT

Possible tally sheet for a manual recount using digital images

	A	B	C	D	E	F
1	Possible tally sheet for a manual recount using digital images					
2	(red text indicates votes recorded during manual tally)					
3						
4	Precinct 3033					
5	Ballot Type: BT_013/Card 15					
6	Pct:AVA/Int/Prov/Mail Pct					
7						
8	Race (Seats)	a0010001.tif	a0010002.tif	a0010003.tif	a0010004.tif	a0010005.tif
9	Community College (4)				Kranenburg	
10						
11						
12						
13	Reed Union School District (2)	Mathews		Jackson	Jackson	
14				Mathews	Mathews	
15	Tiburon Fire District (2)					
16						
17	Sanitary District 5 - Tiburon (4)					
18						
19						
20	Reed Union School Measure A (1)	Yes	Yes	Yes	Yes	No
21						
22						
23						
24						
25						
26						
27						
28						

Advantages of this approach

While fulfilling all the requirements and purposes of a manual tally, this approach has several advantages. This method is more replicable and verifiable, more transparent and observable and more cost-effective. As such it better achieves the goals of the manual tally, which are to verify the accuracy of machine tallies or to detect any errors and thus to promote public confidence in election results.

- **Verifiable and replicable:** The combination of image files and data table allows anyone to verify whether all ballots were tallied correctly. As a result, the tally can be replicated without physically handling and tallying all the ballots; you just have to view each image and double-check whether the votes recorded in the data table are correct.
- **Transparent and observable:** This process is dramatically more transparent than a traditional hand count if images are projected on a screen or the Internet and the data table is made public. It's more observable because it's easier for observers to view the ballot – it's projected on a screen or the Internet – and it's easier to observe whether votes are being recorded correctly. In a traditional hand



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count, if an observer looks away from a tally clerk for an instant, the person can miss a tally mark and have no way of knowing whether it was placed in the correct row and column. With our proposed approach, each image and the tally marks remain after a caller calls a ballot and a tally clerk records it.

- *Cost effective:* It is substantially less expensive to image and review ballots in this manner than it is to tally them in a traditional hand count. This means that cost, labor and time do not have to limit jurisdictions from only tallying the minimum number of required precincts, and escalating the number of precincts in a manual tally does not become cost prohibitive.

Main Office

3 Bethesda Metro Center, Ste. 700, Bethesda, MD 20814
(301) 656-9500 or toll-free: (866) 624-8570 ext.1
www.trueballot.com